

## CAREX CURVATA (CYPERACEAE) IN POLAND

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**Abstract:** Two new localities of *Carex curvata* Knaf in Poland were found. The species has not been reported from this country for nearly a century. This paper gives the phytosociological characteristics of the newly found stations, a map of the distribution of *C. curvata* in Poland, a description and drawing of the species, and a key to related species.

**Key words:** Cyperaceae, *Carex curvata*, taxonomy, distribution, habitats, Poland

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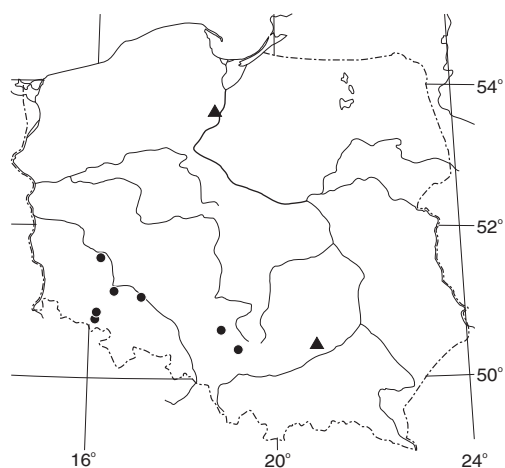
*Carex curvata* Knaf was found in June 1994 in the Skorocice Nature Reserve (50°25'N/20°40'E) in the Niecka Nidziańska basin (S Poland). The station was revisited and the occurrence of the species confirmed in June 2001. In July 2000 a second station of *C. curvata* was discovered in the Opalenie Nature Reserve (53°45'N/18°49'E) on the lower Vistula River. Herbarium specimens have been deposited in the Herbarium of the Institute of Botany of the Polish Academy of Sciences in Kraków (KRAM). The phytosociological characteristics of both locations are given in Table 1 (the species names follow Mirek *et al.* 1995).

*Carex curvata* is not new to Polish flora but rather a restored species, so to speak. Even though it was reported from Silesia (Fiek & Uechtritz 1881; Schube 1903, 1904) it was not included in the first postwar edition of the standard 'Polish Flora' (Szafer *et al.* 1953). The absence of *C. curvata* in the book cannot be explained merely by its unstable taxonomic position. The key to *Carex* in that work gives the user no chance to determine *C. curvata*; moreover, the descriptions of *C. brixoides* L. and *C. praecox* Schreber, species in which *C. curvata* may possibly have been included and with which it is often mistaken, do not incorporate features allowing its identification. Therefore a key for identification of these related species is provided below.

*Carex curvata* is a thermophilous grassland species. In Central Europe its occurrence is connected with communities of so-called forest

steppe (Schultze-Motel 1968). Localities of *C. curvata* are known from Germany (Rothmaler *et al.* 1994), the Czech Republic, Slovakia (Dostál 1989), Hungary (Szelağ & Dobolyi 2000), Romania (Savulescu 1966), Austria (Melzer 1964), Switzerland (Hess *et al.* 1967) and Belgium (De Langhe 1963).

In Poland, *C. curvata* is undoubtedly a rare species (Fig. 1). However, its occurrence in other parts of Poland is probable, especially in carbonate soil areas with concentrations of well-preserved thermophilous vegetation.

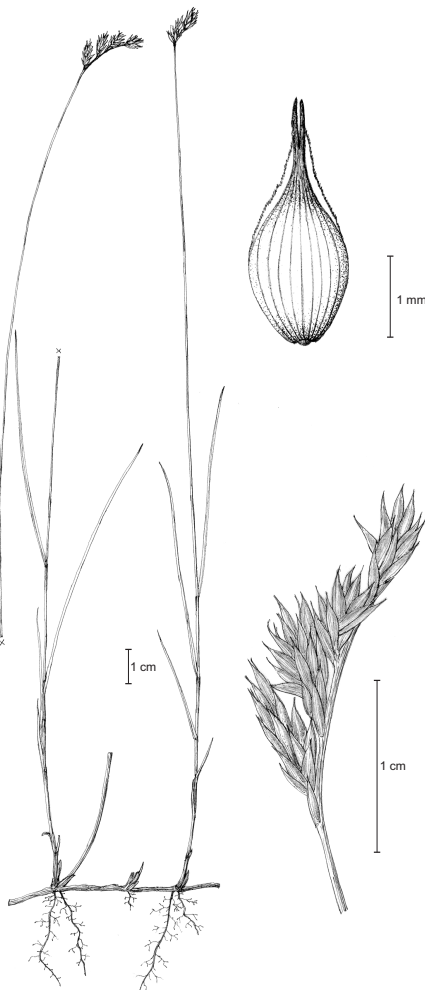


**Fig. 1.** Distribution map of *Carex curvata* Knaf in Poland. ● – previously known localities, ▲ – new localities.

*Carex curvata* Knaf (Fig. 2)

Flora 30:184. 1847.

*C. brizoides* L. subsp. *curvata* (Knaf) Čelak., Nachtr. Prodr. Fl. Böhm.: 733. 1881. – *C. brizoides* L. var. *curvata* (Knaf) Beck, Fl. Nieder-Österr. 1: 135. 1890. – *C. brizoides* L. subsp. *intermedia* Čelak., Prodr. Fl. Böhm.: 62. 1867. – *C. schreberi* Schrank var. *curvata* (Knaf) K. Richt., Pl. Eur. 1: 150. 1890. – *C. praecox* Schreb. subsp. *curvata* (Knaf) Kük., Pflanzenz. 38: 131. 1909. – *C. praecox* Schreb. subsp. *intermedia* (Čelak.) Schulze-Motel, Hegi Illustr. Fl. 2/1: 119. 1968.



**Fig. 2.** *Carex curvata* Knaf. Plant, utricle and detail of synflorescence. Drawn from specimen collected in the Skorocice Reserve (Z. Szeląg s.n., KRAM).

Perennial with long, thin, underground stolons. Stem 30–60 cm high, erect and slightly longer than leaves at anthesis, elongating and bending afterwards, entirely arched and drooping at the

**Table 1.** Phytocoenological spectrum of *Carex curvata*. 1 & 2 – Skorocice reserve, gypsaceous slopes, 12 May 1994; 3 & 4 – Opalenie reserve, *Tilio-Carpinetum* forest margin, 6 July 2001.

Relevé number	1	2	3	4
Area of relevé [m <sup>2</sup> ]	25	18	12	15
Inclination [°]	10	5	5	5
Exposure	W	SW	S	S
Altitude a.s.l. [m]	250	250	50	50
Cover of herbaceous plants [%]	80	70	80	80
<i>Carex curvata</i>	4	2	4	3
<i>Acinos arvensis</i>	.	+	+	.
<i>Allium montanum</i>	.	+	.	.
<i>Allium oleraceum</i>	+	.	+	.
<i>Anthericum ramosum</i>	.	.	+	+
<i>Anthyllis vulneraria</i>	.	+	+	.
<i>Astragalus danicus</i>	.	+	.	.
<i>Brachypodium pinnatum</i>	1	.	.	.
<i>Carex hirta</i>	.	.	1	.
<i>Carex pairaei</i>	+	.	.	+
<i>Centaurea scabiosa</i>	+	.	1	1
<i>Clinopodium vulgare</i>	+	+	.	.
<i>Echium vulgare</i>	+	.	.	.
<i>Geranium sanguineum</i>	.	.	1	+
<i>Inula salicina</i>	.	.	1	.
<i>Lathyrus pisiformis</i>	.	.	+	1
<i>Medicago falcata</i>	+	+	.	.
<i>Oxytropis pilosa</i>	.	+	.	.
<i>Peucedanum cervaria</i>	.	+	.	1
<i>Peucedanum oreoselinum</i>	.	.	1	+
<i>Polygonatum odoratum</i>	.	.	+	1
<i>Potentilla alba</i>	.	.	+	+
<i>Potentilla arenaria</i>	+	+	.	.
<i>Scorzonera purpurea</i>	.	+	.	.
<i>Sedum maximum</i>	.	.	.	+
<i>Sisymbrium polymorphum</i>	+	+	.	.
<i>Thymus austriacus</i>	.	1	.	.
<i>Thymus marschalianus</i>	+	1	.	.
<i>Trifolium alpestre</i>	.	.	.	+
<i>Trifolium medium</i>	.	.	.	+
<i>Viola collina</i>	.	+	.	.

end of the vegetational period. Leaves 1(–2) mm wide, flat, flaccid. Spikes usually slightly curved or, rarely, some straight. Glumes light brown, almost as long as utricles; these winged in the upper half only, gradually narrowed into beak. Stigmæ 2. Fruit (nutlet) ovate, brown. Flowering from end of April to May.

*Carex curvata* differs from *C. brizoides* by its narrower leaves, brown glumes, and having its stem longer than the leaves. It differs from the second related species, *C. praecox*, by its curved spikes, longer bracts, and having utricles winged in the upper half only. Other characteristics are summarized in the key below.

LIST OF STATIONS. POLAND. LOWER SILESIA: Bolków, 50°55'N/16°06'E (Schube 1904); Boronów, 50°40'N/18°55'E (Fiek & Uechtritz 1881; Schube 1904); Głogów, 51°39'N/16°05'E (Fiek & Uechtritz 1881; Schube 1904); Kamienna Góra, 50°47'N/16°02'E (Schube 1904); Wrocław, 51°07'N/17°02'E (Fiek & Uechtritz 1881; Schube 1904) Malczyce, 51°13'N/16°29'E (Schube 1904); UPPER SILESIA, Siemianowice, 50°18'N/19°02'E (Schube 1904); NIECKA NIDZIAŃSKA BASIN, Skorocice Reserve, 50°25'N/20°40'E, 12 May 1994, *leg. Z. Szelaĝ s.n.* (KRAM); LOWER VISTULA RIVER VALLEY, Opalenie Reserve (53°45'N/18°49'E), 6 July 2001, *leg. Z. Szelaĝ s.n.* (KRAM).

#### KEY TO RELATED SPECIES

1. Glumes whitish to pale yellow. Inflorescence 2–3 cm long, lax, only 2–3 apical spikes clustered. Spikes 5–8, conspicuously curved, especially lower ones. Leaves 2–2.5(–3) mm wide. Stem at most equally tall as basal leaves, in fruit arched, often entirely prostrate . . . . . *C. brizoides* L.
- 1.\* Glumes pale to dark brown. Inflorescence 1–2 cm long, at least apical spikes conspicuously clustered. Spikes 3–6, at most slightly curved. Leaves 1(–2) mm wide. Stem taller than basal leaves . . . . . 2
2. Stem always erect, taller than basal leaves. Spikes straight. Glumes dark brown, 2/3 as long as utricles; these winged in upper 2/3, abruptly narrowed into beak . . . . . *C. praecox* Schreber
- 2.\* Stem before fruiting stage erect and slightly longer than basal leaves, afterwards elongating and arched. Spikes slightly curved or, rarely,

some straight. Glumes pale brown, almost as long as utricles; these winged only in upper half, gradually narrowed into beak . . . . . *C. curvata* Knaf

ACKNOWLEDGEMENTS. I thank Jolanta Urbanik (Kraków) for her drawing of *Carex curvata*, Wojciech Paul (Kraków) for the English translation, and the anonymous reviewer for valuable comments on the manuscript. This study was financially supported by the State Committee for Scientific Research (KBN grant 6 P04C 090 20).

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